



# MATERIAL SAFETY DATA

OCEAN NETWORK EMERGENCY PHONE 1-800-OLIN-911

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD. (REFER TO THE OSHA CLASSIFICATION IN SEC. I.) THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE. THE EXPOSURE TO THE COMMUNITY, IF ANY, IS QUITE DIFFERENT.

## I. PRODUCT IDENTIFICATION

REVISION NO : 1  
REVISION DATE : 6/16/93  
PRODUCT CODE : CPE133816  
FILE NUMBER : CPE00009.0213  
PRODUCT NAME: PACE(R) CHLORINATING 1" TABLETS

SYNONYMS: Trichloroisocyanuric Acid, TCCA, Trichlor  
CHEMICAL FAMILY: Chloroisocyanurates  
FORMULA: (ClNCO)<sub>3</sub>  
DESCRIPTION: Swimming pool sanitizer  
OSHA HAZARD CLASSIFICATION: Oxidizer, skin corrosive, eye hazard, oral  
toxin, lung toxin

## II. COMPONENT DATA

### PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Trichloro-s-triazinetriene  
CAS NUMBER: 87-90-1  
PERCENTAGE RANGE: 96-100  
HAZARDOUS PER 29 CFR 1910.1200: Yes  
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Dichloroisocyanuric acid  
CAS NUMBER: 2782-57-2  
PERCENTAGE RANGE: 0-4  
HAZARDOUS PER 29 CFR 1910.1200: Yes  
EXPOSURE STANDARDS: None Established

## III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.  
STORAGE CONDITIONS: Store in a clean dry well ventilated area. Keep away from incompatible chemicals (see below).  
DO NOT STORE AT TEMPERATURES ABOVE: 60 Deg.C (140 Deg.F)

#### PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Indefinite. Available chlorine loss can be as little as 0.1% per year at ambient temperatures.

INCOMPATIBLE MATERIALS FOR PACKAGING: Paper, cardboard

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Organic materials, reducing agents, nitrogen containing materials, other oxidizers, acids, bases

#### IV. PHYSICAL DATA

APPEARANCE: White, granular solid or tablet-form product

FREEZING POINT: Not Applicable

BOILING POINT: Not Applicable

DECOMPOSITION TEMPERATURE: 225 Deg.C (437 Deg.F)

SPECIFIC GRAVITY: > 1 @ 20 Deg.C

BULK DENSITY: Granular-0.89 to 1.1 g/cc; Tablets-1.16 to 1.90 g/cc

pH OF 1% SOLUTION: 2.7-2.9

VAPOR PRESSURE @ 25 DEG.C: Not Available

SOLUBILITY IN WATER: 1.2% @ 25 Deg.C

VOLATILES, PERCENT BY VOLUME: Not Applicable

EVAPORATION RATE: Not Applicable

VAPOR DENSITY: Not Applicable

MOLECULAR WEIGHT: 232.5

ODOR: Sharp, chlorine-like, bleach odor

COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Available

#### V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

##### PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA approved respirator equipped with chemical cartridge for protection against chlorine gas and a dust/mist type prefilter.

VENTILATION: Use local exhaust ventilation to minimize dust levels.

SKIN AND EYE PROTECTIVE EQUIPMENT: Wear gloves, boots, chemical safety safety goggles, aprons or impermeable suit to avoid skin and eye contact.

Eye wash station and safety shower should be provided in the immediate work area.

##### EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):

RESPIRATOR TYPE: Half-face mask worn with chemical safety goggles or full face respirator worn without. Either respirator must be equipped with chemical cartridges for protection against chlorine gas and dust/mist pre filters.

PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit): Neoprene

OTHER: A face shield is not normally required.



## MATERIAL SAFETY DATA

### VI. FIRE AND EXPLOSION HAZARD INFORMATION

#### FLAMMABILITY DATA:

FLAMMABLE: No  
COMBUSTIBLE: No  
PYROPHORIC: No  
FLASH POINT: Not Applicable  
AUTOIGNITION TEMPERATURE: Not Applicable  
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT  
VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

#### NFPA RATINGS:

Health: 3  
Flammability: 0  
Reactivity: 2  
Special Hazard Warning: OXIDIZER

#### HMIS RATINGS:

Health: 3  
Flammability: 0  
Reactivity: 2

EXTINGUISHING MEDIA: Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fires, use water spray or fog. On large fires, use heavy deluge or fog streams. Flooding amounts of water may be required before extinguishment can be accomplished. Do not use dry chemical extinguishers containing ammonia compounds.

### VII. REACTIVITY INFORMATION

#### CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:

TEMPERATURES ABOVE: 225 Deg.C (437 Deg.F)  
MECHANICAL SHOCK OR IMPACT: No  
ELECTRICAL (STATIC) DISCHARGE: No  
OTHER: Contact with small amounts of water may result in an exothermic reaction with the liberation of toxic fumes.  
HAZARDOUS POLYMERIZATION: Will Not Occur  
INCOMPATIBLE MATERIALS: Organic materials, oils, grease, sawdust, reducing agents, nitrogen containing compounds, other oxidizers, acids, bases, dry fire extinguishers containing ammonium compounds

HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen trichloride, chlorine, nitrous oxides, cyanates, carbon monoxide, carbon dioxide  
OTHER CONDITIONS TO AVOID: Damp or slightly wet product (will evolve nitrogen trichloride)

SUMMARY OF REACTIVITY:

OXIDIZER: Yes  
PYROPHORIC: No

ORGANIC PEROXIDE: No  
WATER REACTIVE: No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IF INHALED OR INGESTED. HARMFUL IF EXPOSED TO SKIN OR EYES.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: No Available Data

IRRITATION THRESHOLD: There is no data for irritation threshold.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: TCCA has the potential to be immediately dangerous to life and health.



## MATERIAL SAFETY DATA

### SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

#### INHALATION

##### ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

##### CHRONIC:

Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

#### EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

#### SKIN

##### ACUTE:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.

##### CHRONIC:

Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

#### INGESTION

##### ACUTE:

Irritation and/or burns can occur to the gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration.

##### CHRONIC:

There are no known or reported effects from chronic exposure.

#### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma, respiratory and cardiovascular disease

#### INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known or reported

#### ANIMAL TOXICOLOGY

##### ACUTE TOXICITY

INHALATION LC 50: > 50 mg/l (rats, one hour exposure)  
ORAL LD 50: 490 mg/kg (rat)  
DERMAL LD 50: > 2 g/kg (rabbit)  
IRRITATION: Causes burns to eyes and skin.

##### CHRONIC TOXICITY

There are no known or reported effects from repeated exposure.  
Toxicological investigation indicates it does not produce significant effects from chronic exposure.

##### REPRODUCTIVE AND DEVELOPMENTAL TOXICITY

There are no known or reported effects on reproductive function or fetal development.  
Toxicological investigation indicates it does not effect reproductive function of fetal development.

##### CARCINOGENICITY

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

##### MUTAGENICITY

This product is not known or reported to be mutagenic.

##### AQUATIC TOXICITY

LC 50: Rainbow trout (96 hrs. exposure) - 0.32 ppm  
Bluegill sunfish (96 hrs. exposure) - 0.30 ppm  
Daphnia magna (48 hrs. exposure) - 0.21 mg/l  
Mallard duck (8-day dietary exposure) - > 10,000 ppm  
Mallard duck (LD 50) - 1.6 g/kg  
Bobwhite quail (8-day dietary exposure) - 7422 ppm

#### X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

LAND: TRICHLOROISOCYANURIC ACID DRY, 5.1, UN 2468, PGII, ERG No. 45

WATER: TRICHLOROISOCYANURIC ACID DRY, 5.1, UN 2468, PGII,

IMDG Pg.No. 5190, EmS No. 5.1-05

AIR: SAME AS LAND

HAZARD LABEL/PLACARD: OXIDIZER

REPORTABLE QUANTITY: Not Applicable (Per 49 CFR 172.101, Appendix)



## MATERIAL SAFETY DATA

### XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: Not Applicable (Per 40 CFR 302.4)

#### SPILL MITIGATION PROCEDURES:

Hazardous concentrations in air may be found in local spill area and immediately downwind. If spill material is still dry, do not put water directly on this product as a gas evolution may occur. If material is wet, contact the OCEAN net work for proper stabilization procedures.

AIR RELEASE: Vapors may be suppressed by the use of a water fog.

WATER RELEASE: This material is heavier than water. This material is soluble in water. Stop flow of material into water source as soon as possible. Begin monitoring for available chlorine and pH immediately.

LAND SPILL: Do not contaminate spill material with any organic materials, ammonia, ammonium salts or urea. Clean up all spill material with clean, dry dedicated equipment and place in a clean dry container.

#### SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

This material may be neutralized for disposal; you are requested to contact OCEAN at 800-OLIN-911 before beginning any such operation.

#### PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

Additional respiratory protection is necessary when a small spill involving this product occurs. You are recommended to use a half mask cartridge type NIOSH approved respirator, with chlorine cartridges. All other responses to this material require the use of a self-contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to boots, gloves (see below for compatible materials), hard hat, splash-proof goggles, and impervious clothing, i.e., chemically impermeable suit.

Compatible materials for response to this material are neoprene, chlorinated polyethylene, butyl rubber and saranex.

Protection concerns must also address the following: If this material becomes damp/wet or contaminated in a container the formation of nitrogen trichloride gas may occur and an explosive condition may exist.

## **XII. WASTE DISPOSAL**

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.

If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous solid waste, it must be disposed of in accordance with local, state, and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by treatment.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

## **XIII. ADDITIONAL REGULATORY STATUS INFORMATION**

### **TOXIC SUBSTANCES CONTROL ACT:**

This substance is listed on the Toxic Substances Control Act Inventory.

### **SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE III:**

HAZARD CATEGORIES, PER 40 CFR 370.2:

#### **HEALTH:**

Immediate (Acute)

#### **PHYSICAL:**

Fire and Reactivity

### **EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:**

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

None Established

## **XIV. ADDITIONAL INFORMATION**

MSDS REVISION STATUS: 1. Minor format modification to Sect.V and IX.

2. DOT HM181 information added Sect X and

Emergency Response Guide Number revised



#### XV. MAJOR REFERENCES

1. ACGIH Guide to Protective Clothing. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1987.
2. ANSI Z88.2. Recommended Practice for Respiratory Protection. American National Standards Institute, New York, NY.
3. Baker, C. J., The Fire Fighter's Handbook of Hazardous Materials, 4th Ed., Indiana: Maltese Enterprises, Inc., 1984.
4. Bretherick, L., Handbook of Reactive Chemical Hazards, 3rd Ed., Boston, MA: Butterworths, 1985.
5. Cassarett, L. and J. Doull, Eds., Toxicology: The Basic Science of Poisons, 3rd Ed., New York: Macmillan Publishing Co., Inc. 1986.
6. CERIS (Chemical Emergency Response Information System) On Line Database. Association of American Railroads.
7. Chemical Degradation and Permeation Database and Selection Guide for Resistant Protective Materials. Austin, TX.
8. Clayton, G. and F. Clayton, Eds., Patty's Industrial Hygiene and Toxicology, Vol.2A-C 3rd Ed., New York: John Wiley & Sons, 1981-82.
9. Code of Federal Regulations, Titles 21, 29, 40 and 49. Washington, DC: U.S. Government Printing Office.
10. Emergency Response Guide (D.O.T.). Washington, DC: U.S. Government Printing Office, 1988.
11. Fire Protection Guide on Hazardous Materials, 9th Ed., National Fire Protection Association, Batterymarch Park, Quincy, MA, 1986.
12. Gosselin, R., et al., Gosselin-Clinical Toxicology of Commercial Products, 5th Ed., Baltimore: Williams and Wilkins, 1984.
13. Hazardline, Occupational Health Services Inc., New York, NY.
14. IARC Monogram on the Evaluation of Carcinogenic Risk of Chemicals to Man., Geneva: World Health Organization, International Agency for Research on Cancer.
15. Lenga, R., The Sigma-Aldrich Library of Chemical Safety Data, 1st Ed., Milwaukee, WI: Sigma-Aldrich Corporation, 1985.
16. Lewis, R. and D. Sweet, Eds., Registry of Toxic Effects of Chemical Substances, 1985-86, Washington, DC: U.S. Government Printing Office, 1987.
17. Medline, U.S. National Library of Medicine, Bethesda, MD.
18. NIOSH Pocket Guide to Chemical Hazards. Washington, DC: U.S. Government Printing Office, 1985.
19. Olin Respiratory Protection Manual.
20. Sax, N. Irving, Dangerous Properties of Hazardous Materials 6th Ed., New York: Van Nostrand Reinhold Company, 1984.

21. Threshold Limit Values and Biological Exposure Indices for 1988-89. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1987.
22. Toxic Substances Control Act Inventory, Washington, DC: U.S. Government Printing Office, 1986.
23. Hammond, B., et al., A Review of Toxicology Studies on Cyanurate and its Chlorinated Derivatives, Environmental Health Perspectives, Vol. 69, pp. 287-292, 1986.
24. 28-Day Dosing Study in Rats (Extended to a 59-Day Dosing Study), s-Triazinetriol, Monosodium Salt; Sodium Dichloro-s-triazinetriol dihydrate and Trichloro-s-triazinetriol, International Research and Development Corporation, Mattawan, MI, Study No. 167-150, September 12, 1980.
25. Eight-Day Dietary LC 50 - Bobwhite Quail, ACL 85, Final Report, Truslow Farms Inc., Wildlife Research Division, Sterling, VA, Project No. 139-112, July 15, 1975.
26. Eight-Day Dietary LC 50 - Mallard Duck, ACL 85, Final Report, Truslow Farms Inc., Wildlife Research Division, Sterling, VA, Project No. 139-113, July 15, 1975.
27. Acute Oral LD 50 - Mallard Duck, ACL-85, Final Report, Truslow Farms Inc., Wildlife International Ltd., Chestertown, MD, Project No. 139-120, October 18, 1976.
28. Acute Toxicity of ACL-85 to *Daphnia magna*, Bioassay Report, E G & G, Bionomics, Aquatic Toxicology Laboratory, Wareham, MA, November, 1976.
29. Four-Day Static Aquatic Toxicity Studies with ACL-85, LOT No. 5/8/75 GDN in Rainbow Trout and Bluegills, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, BTL No. 75-39, IBT No. 621-07227, September 5, 1975.
30. Acute Toxicity Studies with Trichloroisocyanuric acid, Industrial BIO-TEST Laboratories, Inc., Northbrook, IL, P.O. No. RC-34355, IBT No. 8530-08303, April 20, 1976.



## MATERIAL SAFETY DATA

31. Inhalation LC 50 (Rat), Trichloroisocyanuric Acid (Trichloro-S-Triazinetrione), Final Report, Consumer Product Testing, Fairfield, NJ, Study No. 78272-1, Reference No. P.O. RC-42380, April 9, 1979.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

OLIN MSDS CONTROL GROUP  
Olin Corporation  
120 Long Ridge Road  
Stamford, CT 06904

Phone Number: (203) 356-3449

OLIN CORPORATION SUBSIDIARIES AND AFFILIATED ENTITIES: ASAHI-OLIN LTD., BRIDGEPORT BRASS CORPORATION, INDY ELECTRONICS, INC., OLIN CHLORATE CORPORATION, OLIN FABRICATED METAL PRODUCTS INC., OLIN HUNT SPECIALTY PRODUCTS INC., OLIN ELECTRONICS TECHNOLOGY, OLIN MESA CORP., OLIN SPECIALTY METALS CORPORATION, PACIFIC ELECTRO DYNAMICS, INC., PHYSICS INTERNATIONAL COMPANY, ROCKET RESEARCH COMPANY, OCG MICROELECTRONIC MATERIALS, INC.